

DEPARTMENT OF THE INTERIOR, CANADA

Hon. CHARLES STEWART, Minister; W. W. CORY, Deputy Minister

FORESTRY BRANCH—BULLETIN No. 72

R. H. CAMPBELL, Director of Forestry

SUCCESS IN PRAIRIE TREE PLANTING



OTTAWA

F. A. ACLAND

PRINTER TO THE KING'S MOST EXCELLENT MAJESTY

1922

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SUCCESS IN PRAIRIE TREE PLANTING

BY

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Chief of Tree-Planting Division, Indian Head, Saskatchewan



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SCOPE OF THE WORK

The object of this bulletin is to set forth the possibilities of tree planting in general on the prairies, and more particularly to review the development of the co-operative tree-planting system inaugurated by the Forestry Branch, of the Department of the Interior, Canada, some twenty years ago, the extent to which settlers have availed themselves of this system, the general success of the plantations, and conclusions based on the experience obtained during this period as to the best methods to follow in planting, cultivating, and caring for the plantations generally.

The absence of tree-growth on the prairies has always been recognized as a very considerable drawback. Although trees, where successfully grown on the prairies, are of immense material advantage in the matter of furnishing lumber, fuel, and protection, it will no doubt be generally admitted that under present conditions of development in this country the greatest value is derived from their aesthetic quality, the beauty they add to the surroundings, and the general feeling of rest and comfort they lend to the home.

EFFORTS OF EARLY SETTLERS TO PLANT TREES

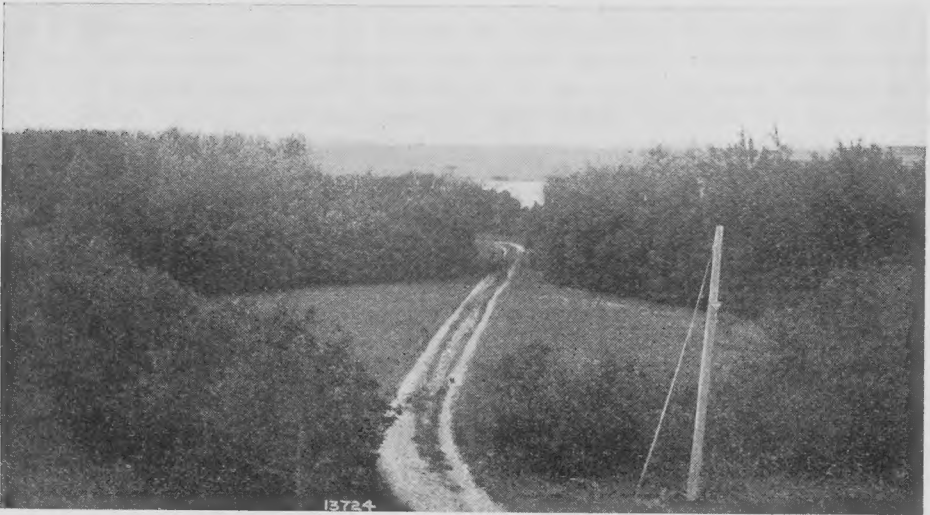
It was only natural that the early settlers, coming as they did from Eastern Canada and other countries abundantly blessed with natural forests and beautiful home surroundings, should almost immediately have tried to improve the appearance of their new homes by planting trees. In the majority of cases trees were brought from Ontario. Very little advantage was taken of the native trees which were found in a few localities in favoured spots along the river bottoms and protected valleys.

These eastern trees were planted generally as such trees would have been in Ontario, without any special preparation of the soil; and almost invariably the plantings were a failure. Following frequent disappointments, the impression became general that trees could not be grown successfully on the prairies; the average settler looked upon tree planting as a fad, and the few individuals who persisted in their attempts at tree culture were regarded as faddists, and their efforts were frequently the subject for local ridicule. Gradually, however, an individual here and there achieved more or less success by using such native kinds as maple, ash, and elm; and eventually it was realized, that, while the majority of eastern trees would not prove hardy under prairie conditions, nevertheless excellent results could be obtained by properly handling the native kinds. The knowledge of the successful results secured by these early planters was not very widely disseminated, and it was probably not until after the Experimental Farms at Brandon and Indian Head were established that any systematic experimenting was done and results published.

GOOD WORK OF THE EXPERIMENTAL FARMS AND OTHER EXPERIMENTERS

So far as the West is concerned, the experiments with tree planting as carried out on the Indian Head and Brandon Experimental Farms have undoubtedly been one of the greatest factors in furthering tree culture generally throughout the prairies. Not only were all the native kinds of trees planted but immense numbers of trees from Eastern Canada and Europe were given a trial. As a result of this work authoritative information soon became available as to just what kinds of trees could be grown, and what varieties should be avoided. In addition to the native

species many Russian and northern European sorts proved suitable to this climate. Of these exotic trees the Russian poplars, Russian willows, caragana, and Scotch pine have proved particularly adaptable, and are now widely used everywhere in the West. After sixteen years' experimenting the late Dr. Wm. Saunders, then Director of Experimental Farms, published a very valuable bulletin on the trees and shrubs tested on the western Experimental Farms, and listed all varieties which might reasonably be expected to do well. For those interested in tree and shrub planting this was the most valuable publication and probably the only one, published up to that time, giving absolutely reliable information. This bulletin is still available upon application to the Publications Branch, Department of Agriculture, Ottawa, and should be carefully studied by all prospective planters. This publication is known as Experimental Farm Bulletin No. 47, "Trees and Shrubs in the Northwest."



Trees set out by Peter Dodds of Elgin, Manitoba, showing seventeen years' growth. These are principally maple, ash, and poplar

For many years a limited distribution of trees, shrubs, and tree seeds was carried on each spring from the Experimental Farms at Brandon and Indian Head, and as a result small plantings were made on hundreds of farms widely scattered over the West. The success of the plantations on these farms demonstrated to the many visitors what might be accomplished, and undoubtedly encouraged many farmers to do something along this line on their own farms.

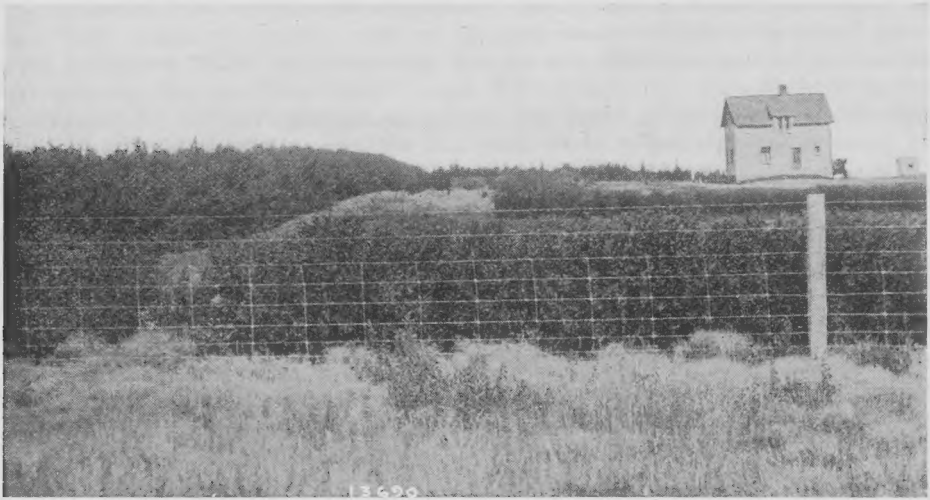
The Canadian Pacific Railway also made some early plantings on some of their station grounds, notably at Regina, Moose Jaw, and Calgary. These were very successful and further demonstrated the possibilities of tree culture. Plantings were also made around Government House at Regina. Much of the success of this work was the result of the personal interest taken in tree planting by Lieutenant Governor Forget. As a result of these pioneer plantings the way was paved for a more general expansion. The Federal Government has always been aware of the necessity for encouraging tree culture on the prairies but it was not until 1901 that a really definite and practical scheme for assisting settlers in this work was put into operation.

WHY THE CO-OPERATIVE SYSTEM WAS ESTABLISHED

At that time immense areas in Saskatchewan and Alberta were still undeveloped, but very considerable numbers of new settlers were coming into the country each season. These new-comers were for the most part totally unacquainted with the best

farming practice under their new conditions and had still less knowledge of horticultural or tree-planting problems. There was a very limited supply of hardy western-grown stock available for prairie planting and the great bulk of the material used was grown under different conditions too far to the south. No instruction was given as to the proper methods of planting on the prairie. Naturally the majority of plantations set out under these circumstances were total failures. Not knowing the real causes for their lack of success these planters blamed the country and climatic conditions. Failures were so numerous and widespread that the idea became general that it was not possible to grow trees on the prairies. This was the condition prevailing in 1901. The results, previously mentioned, of successful plantings were not at that time sufficiently well known to counteract the prevailing impression, and it was realized by the Government that some practical scheme which would result in demonstrating in a convincing manner that trees could be successfully grown was necessary to again stimulate interest in this very important work.

Owing to peculiar climatic conditions, only certain varieties could be expected to survive, and special methods of cultivation and management must be employed to ensure success. It was felt, however, that simply disseminating such information would not in itself be sufficient to encourage any widespread interest in tree planting. The supply of planting material available at that time was altogether too limited, and the average settler, particularly the one taking up new land, was not financially in a position to purchase seedlings and cuttings in large enough numbers to set out really effective shelter-belts. It seemed, therefore, imperative that any system adopted to encourage tree planting must include the provision of suitable material. After a very careful consideration of all matters relating to this problem the Government decided to commence, in the spring of 1901, a free distribution of seedlings, cuttings, and tree seed in sufficiently large individual lots, to enable a settler to establish a



On the farm of S. Josephson of Mere, Alberta. Photograph taken six years after planting really practical system of shelter-belts. In order to ensure the success of these plantations it was necessary to formulate certain regulations regarding the preparation of the ground and the subsequent care of the trees, and to arrange for a system of inspection to make certain that these regulations were carried out as closely as individual conditions would permit.

NECESSARY REGULATIONS

The most important regulation was one regarding the preparation of the soil. Knowing that later success is practically dependent on proper preparation, it was decided that trees would be supplied only for planting on well prepared summer-fallow.

Such preparation provides a reasonable reserve of moisture to start the young plantation in a dry season, and at the same time is the only way to ensure the eradication of the native couch grass and sweet grass, which are the worst enemies of the prairie plantation. Another regulation was to the effect that trees would not be furnished for planting within thirty yards of any permanent buildings. This was to avoid trouble and discomfort in later years, for after the belts develop they accumulate in winter large drifts of snow, which, if piled up around the buildings would make the trees more of a nuisance than a benefit. The planter was also asked to agree to set out the trees as directed; this refers more particularly to the distance between the individual trees and the manner in which the different kinds are mixed. Provision was also made for fencing the plantations and to ensure reasonable cultivation among the trees, until the belts might become fairly well established. This distribution was available only to farmers living on the open prairie. Where natural shelter was already provided, or where a farmer could easily secure tree seeds and small trees from the bush in his immediate vicinity, he might be reasonably expected to make use of such local supplies. It was decided, too, that it would not be advisable to furnish material for planting on town or village lots, where only a few plants would be required by each individual and then only for purely ornamental purposes.

GROWTH OF THE DISTRIBUTION SYSTEM

At first it was somewhat difficult to interest many farmers sufficiently to avail themselves of this free distribution, even though the young trees were laid down at their nearest express office absolutely free of charge. However, in the spring of 1901, 58,000 seedlings were supplied to forty-seven farmers in Manitoba and the Northwest Territories, and in subsequent seasons applications increased rapidly. In 1902, 466,000 seedlings were sent out; in 1903, 917,950; and in 1904, 1,800,000. Every fresh plantation in a district acted as a stimulus, arousing further interest and inducing other farmers in the same neighbourhood to apply for trees. Season by season the demand continued to increase so rapidly that in 1916 there were over 10,200 individual applicants on the inspection lists, and in 1917 some 7,664,000 seedlings and cuttings were distributed from the Indian Head and Saskatoon Nursery Stations. From 1901 to 1921 inclusive the distribution of seedlings and cuttings totalled 60,418,000.

RESULTS OF THE WORK

Questions naturally arise as to the results of this distribution. Have the trees grown? Have the plantations been properly cared for? Has general interest in tree planting been stimulated? Do the results appear to have justified the expenditure of public money?

As to the success of the plantations generally there is no doubt. From reports sent in by individual planters and observations made by the tree-planting inspectors



Typical farm shelter-belt planted by L. Hainstock, of Harris, Saskatchewan.

each season, at least 70 per cent of all plantations are quite successful and are well cared for; probably 15 per cent are more or less neglected and cannot be considered a complete success; while perhaps 15 per cent have resulted in total failure. Failure sometimes may result from causes over which the planter has no control, such as extreme drought, severe hail-storms, flooding, etc., but, on the whole, such cases are exceptional. In the majority of cases, failure can be traced directly to neglect. Quite a large percentage of the plantations which have failed are on property which has since changed hands, the new owner taking no interest in tree culture. Many are on rented farms, where the tenant cannot be expected to give the trees the same care as would the owner. Wherever proper care and cultivation have been given the trees they have grown well, and in the great majority of cases the owners have given the trees reasonable attention. So far as a means of stimulating interest in tree planting is concerned, there is undoubted evidence that the free distribution has been a very important factor. The enormous increase in the number of applications for trees received during the first ten years that the scheme was in operation, is in itself an indication of increased interest; while in hundreds of letters received at this office it is stated that interest has been aroused by observing successful plantations set out under the co-operative system.

PLANTATIONS NOW WORTH TWELVE MILLION DOLLARS

Do the results appear to have justified the expenditure of public money? Leaving aside for the moment any question of indirect benefit, and considering only the direct financial feature, it is found that, as a result of this distribution, there are now, at a very conservative estimate, at least 40,000 well cultivated shelter-belts. Inquiry has been made from time to time as to the value a farmer places on his shelter-belt, and hundreds of letters received in reply give valuations of from \$500 to \$5,000. The very great majority of planters value their belts at around \$1,000.* In many cases there is no question that this valuation is not exaggerated, but to be conservative an average value of \$300 may be taken as being well within reason. At this figure the 40,000 plantations would represent a total of \$12,000,000. This is at least \$11,200,000 in excess of the total costs of operating the Tree-Planting Division since it was first organized in 1901. The chief value of a plantation on the prairies, however, is not the actual cash value. Each successful tree-belt is a practical demonstration as to the kinds and varieties of trees which can be depended upon in a particular locality. It encourages those who have been too sceptical to do any planting themselves, it relieves the general monotony of the landscape, and lends a greater impression of permanency to farm life. In numerous cases these groves provide recreation spots for the community, where picnics and other gatherings are held during the summer months. There is no doubt that tree planting has now become more or less of a necessity in many districts to assist in preventing soil-drifting, and undoubtedly those who have already had success with the wind-breaks around their gardens and buildings will be the first to undertake this kind of tree planting.

SHELTER-BELTS CREATE DEMAND FOR PLANTING STOCK

The Forestry Branch distributes no stock for private planting in villages, towns, or cities, it supplies no fruit trees, ornamental shrubs, or perennial flowers, and no

* That this valuation is not excessive is shown by a recent decision handed down by an Alberta court. In this case the landlord sued the tenant of his farm for damages to a wind-break of trees planted around the lot containing the farmhouse and other farm buildings. The wind-break was damaged but not destroyed, and a witness for the defendant contended that with good care and attention and the planting of fifty to one hundred new trees the damage would soon be repaired. On the other hand witnesses for the plaintiff estimated the damage at from \$1,500 to \$2,000. After reviewing the evidence, the learned judge stated his conclusion as follows: "On the whole I think the proper amount to allow would be \$1,000. I think with the expenditure of quite a bit less than this sum, and with care and attention for a few years, the wind-break can be made practically as good as ever. But the value in the meantime will be lost, and, therefore, I think the amount mentioned is not excessive." Judgment was given on this basis.

trees suitable for specimens, boulevard, or avenue planting. The work is confined wholly to trees for farms on the open prairie. As a result of the establishment of wind-breaks the owners of farms thus protected soon discovered that ornamental trees and shrubs, and fruit trees, which will not grow at all on the open prairie will do well inside a shelter-belt. The effect of this discovery has been such a great increase in the number of gardens, where tender vegetables, small fruits, and some tree fruits are grown, that one of the highest horticultural authorities in Canada, in visiting the Prairie Provinces after an interval of some years, stated that the West was rapidly becoming a land of gardens. He said that, wherever the farmers protected their home plots with wind-breaks and hedges, gardens would inevitably follow. Thus every owner of a successful shelter-belt becomes a purchaser of fruit trees, fruit bushes, and ornamental trees and shrubs from commercial nurseries.



Plantations of C. Steffen, Harris, Saskatchewan, who was supplied with trees in 1908 and 1909

The great amount of educational and demonstration work carried on since 1901 has been a great factor in the increased interest taken in horticultural work and consequent increased demand for planting material of all kinds not only by the owners of farm gardens but by the residents in villages, towns, and cities. Though, as already stated, the Forestry Branch does not supply material to residents of urban communities there is no doubt that the great campaign of the past few years to develop public and private gardens and parks all over the West has been in a great measure due to the success of the work on the farms carried on by the Tree-Planting Division.

NEED FOR TREE PLANTING RECOGNIZED

In this connection mention may be made of similar lines of work which are being carried out by other governmental bodies. In Ontario, a province abundantly supplied with natural forests, and having climatic conditions which are most suitable for tree culture, a system of free distribution of forest tree seedlings for shelter-belt and woodlot planting has been in operation for many years. Each season the provincial nurseries are being developed with an increasing capacity. The province of Quebec, too, has established a provincial forest nursery, from which, in 1919, a total of about one million seedlings was distributed, chiefly for woodlot restoration, though a considerable proportion was for ornamental planting. The quantity shipped has greatly increased since then, and the reports indicate that more land will have to be added to the nursery. There is a nominal charge for this stock.

In the State of Pennsylvania, also well forested, the State Department of Forestry commenced distribution of forest tree seedlings in 1910. For six years applicants were required to pay packing and transportation charges and also costs to cover growing of stock in the nurseries. Apparently this system was not achieving desired results and in 1915 the distribution was made free. Since then the development of private planting has been enormous. In 1914 the trees sent out numbered only 108,685; while in 1919, 3,139,631 were distributed; 4,000,000 were available for 1920, and plans of development call for a production of 10,000,000 for distribution in 1923. Wind-break and shelter-belt planting is one of the preferred purposes for which these trees are supplied.

The Federal United States Forest Service started a distribution of trees in 1912, and up to 1915 had sent trees to about 2,500 farmers, mostly in the State of Nebraska. At present a distribution of trees is now conducted from the Experiment Station at Mandan, North Dakota, along almost identical lines with the distribution in Western Canada. Mr. F. E. Cobb, who has charge of this distribution, states that "Even in western Minnesota the later-taken farms are still without trees or shelter-belts, despite the closeness of commercial nursery supply and a rainfall running over twenty inches a year." It appears therefore that Federal and State authorities generally recognize the necessity for encouraging tree planting even in the most favoured districts, as it seems to be evident that the desired development cannot be secured by private enterprise alone.

CONCLUSIONS BASED ON RESULTS

The results generally obtained throughout the three Prairie Provinces during the past twenty years indicate that the methods of cultivation recommended and the kinds of trees distributed by the Forestry Branch are on the whole those best adapted to average prairie conditions.

SPACING OF TREES

It has been demonstrated beyond question that close planting of four by four feet apart, will, provided proper cultivation is given and grass kept out, give better results for less labour than wider spacing. Wide spacing, setting trees, say, eight by eight feet or four by ten feet, will in many cases prove satisfactory, but in such cases successful results depend *absolutely* on continual cultivation amongst the trees; and belts where trees are widely spaced will require cultivation to be kept up for from four to eight years longer than is necessary in belts spaced four by four feet or three by six feet. It is also obvious that the wider-spaced trees cannot possibly, during the earlier stages, afford as good a wind-break as those planted close together.

PREPARATION OF GROUND

So far as preparation is concerned, except where irrigation is possible, it is a great mistake to plant on any ground which has not been most thoroughly summer-fallowed in the previous season. Even under irrigation, summer-fallow is advisable, particularly in the case of new land or any soils where sweet grass or couch grass may be growing. Every effort should be made to have every vestige of native grasses completely exterminated. Brome grass is just as bad as any of the native grasses should it once get a foothold amongst the trees.

WIDTH OF BELTS

Experience would indicate that in general very wide belts are not necessary. Where shelter from the winds is the principal object, a belt from five to seven rows wide will prove quite effective. If wider than this, snow will undoubtedly cause more



Well sheltered buildings of Wm. Paterson, Indian Head, Saskatchewan

or less injury by breaking down the trees, as the snowdrifts settle in the spring. The only way to avoid this danger is to plant a single or double row some thirty yards out from the main belt. This will prevent large piles of snow from drifting into the wider belt. The one advantage of the wide belt is in cases where the owner wishes to grow a small supply of fuel or fencing on his own place.

Particularly in the drier districts, experience would seem to indicate that narrow belts of not more than four or five rows, when properly handled, will on the whole give better satisfaction than wide ones. By "properly handled" is meant the keeping up of thorough cultivation between the rows, until it is impossible to get through with a scuffler, thus allowing the trees to grow as dense as possible from the ground up. This means refraining from any general pruning, and, most important of all, keeping a good wide strip, say, from ten to fifteen feet wide, all around the outer edges of the belts worked up and cultivated every season. The mistake most commonly made is to fence too close to the trees. As a rule the first row is set only four or five feet from the fence and as a consequence after two or three seasons there is no room between to cultivate, with the result that grass may quickly work in from the fence row. The first row should never be planted closer than about twelve feet from the fence or unbroken sod, and the space between should be kept always cultivated.

KINDS OF TREES

The kinds of trees which have proved best are Manitoba maple, green ash, caragana, Russian poplar, and Russian willow. The native birch when procurable is a very rapid growing and most excellent species. The native elm is also exceptionally good, but in many districts the rabbits will eat down the small seedlings year after



A productive Saskatchewan vegetable garden. Maximum crops of the best quality can be grown under such conditions. Seventeen years ago this was unbroken prairie and not a tree or shrub in view. Note the dense growth of the seven-foot native spruce hedge

year. The cottonwood was tried for several years but it was found to die out after ten to twelve years when used in a close belt with other kinds. When set in a single row, with well cultivated ground on each side, it is a very rapid growing and hardy tree.

The Russian poplar is undoubtedly the fastest growing tree we have and is hardy in all parts of the West. There is a danger, however, in using this tree too freely. Its quick growth and hardiness invariably appeal to the inexperienced planter, who does not realize that it frequently becomes, after eight to ten years, infected with a fungus which attacks the trunk and rots the wood, so that a belt consisting only of Russian poplar, while very effective and most encouraging for a few years, will always be a disappointment later on. It is considered, therefore, that willows and Russian poplar should never exceed 50 per cent of the trees in a belt.

The maple is one of the best all-round trees for shelter purposes and should constitute from 30 to 50 per cent of the trees in a belt. Where maple is not entirely satisfactory caragana may be used as a substitute.

The caragana is particularly adapted for hedges, and for inside and outside rows, as it appears to withstand the encroachment of grass rather better than other broad-leaved kinds. It also will stand considerable shade and is, therefore, very valuable for mixing generally with such kinds as poplar and ash, which do not of themselves throw a heavy enough shade to kill out grass and other growth.

In every case a mixture of trees has proved more satisfactory than the use of only one kind of tree.

EVERGREENS OR CONIFERS

The native white spruce, jack pine, lodgepole pine and hardy strains of Scotch pine are especially adapted to prairie conditions. Once established their growth is rapid, and they will remain vigorous and healthy during periods of drought that would often prove fatal to the broad-leaved trees. Every broad-leaved belt should be supplemented with one or two rows of these hardy evergreens. They have proved to be suited to all kinds of soil, with the exception of those that are alkaline.

INSECTS AND THEIR CONTROL

Once a plantation has become well established, a thick dense growth maintained from the ground up, and provision made to keep the outer edges well cultivated, no further difficulties of a general nature need be anticipated. Misfortunes over which the owner can have no control, such as a severe hail-storm, may occasionally occur and result in very considerable damage. Insect pests, however, are more general and in some seasons, if steps are not promptly taken to control such outbreaks, very serious injury may result. As before stated, farmers generally place a very high money value on their shelter-belts. A piece of property worth from \$500 to \$2,000 is surely worth protecting. As an insurance against insect damage every owner of a plantation should keep on hand a small quantity of the easily obtained insecticides, and some apparatus for applying them to the affected trees, so as to be ready to control any insect pests before they are able to do any real injury.

The insects affecting trees can be divided broadly into two groups, namely, those that actually eat the leaves and those that only suck the juices. Practically all caterpillars and beetles belong to the first group; while the green fly or aphid is the most common example of the sucking insects. What will kill insects of one group would generally be quite harmless to the other group, and this must be understood in order that the proper poisons may be used. Those insects which actually eat the leaves can be killed by spraying the trees with a poison which sticks to the leaves and is subsequently eaten. To kill the sucking insects it is necessary to use a liquid which will destroy when it comes in contact with the insect's body.

In general, then, where an owner finds his trees badly infested with some caterpillar or beetle he should at once use, preferably, arsenate of lead. If this is not procurable, Paris green is the next best. It must be remembered that caterpillars when young can generally be destroyed much more easily than when full grown; hence it is advisable to apply the poison at as early a stage as possible.

For the green fly and aphid, preparations of tobacco such as "Nicotine" and "Black Leaf" are very effective and very simple to use. Kerosene emulsion, which can be easily made up from soap and coal oil, is also very generally used.

The ingredients in these preparations are mixed in the following proportions:—

Arsenate of Lead Solution

Arsenate of lead paste.. . . .	1 tablespoonful
Water.. . . .	1 gallon

Paris Green Mixture

Paris green.. . . .	4 to 6 oz.
Fresh lime.. . . .	$\frac{1}{2}$ to 1 lb.
Water.. . . .	40 gallons

Kerosene Emulsion

Soap.. . . .	$\frac{1}{2}$ lb.
Soft water (hot).. . . .	1 gallon
Coal oil.. . . .	2 gallons

The soap is shaved and thoroughly dissolved in the hot water, the coal oil is then added and must be mixed and churned thoroughly. When properly made a thick creamy emulsion will result which can be kept for months if covered from the air. This makes a stock solution. For use as a spray, dilute as follows:—

Stock solution.. . . .	1 gallon
Water.. . . .	9 to 12 gallons

All kinds and makes of spraying apparatus are on the market from the simple force-pump, which can be used in an ordinary bucket, to the large tank outfit with a small gasoline engine.

For general farm use a small barrel spray-pump with about 25 feet of hose and an extension nozzle will be found very satisfactory and not at all expensive.

Insect attacks often occur very suddenly, and serious injury may result in a few hours. It is well, therefore, to be prepared and have the materials and apparatus on hand, ready for immediate use.

FARMERS TELL OF THEIR EXPERIENCES

Nothing indicates the success of this co-operative tree-planting system so convincingly as the actual experiences of farmers who have availed themselves of the free distribution of trees. Recently over a thousand inquiries were sent out to farmers scattered over the three Prairie Provinces in order to find out to what extent the distribution is benefiting the individual planters and the country in general. Hundreds of replies, almost without exception describing successful results, have been received. It is manifestly impossible to publish all of these. A few, however, have been selected from writers in Alberta, Saskatchewan, and Manitoba. The letters selected describe individual plantations pretty evenly distributed over the prairie districts, and indicate that successful plantations can be maintained practically anywhere in these three provinces.

LETTER OF INQUIRY

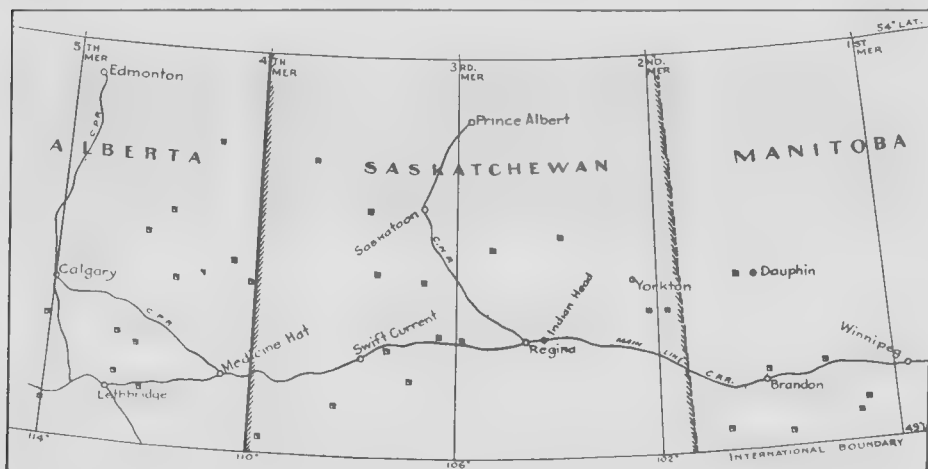
The circular letter sent out inquiring as to the results obtained by those who have received trees from the Indian Head and Saskatoon Forest Nursery Stations contained the following questions:—

- 1. When did you first set out trees obtained from our nurseries?
- 2. Approximate total of trees set out to date?

3. What success have you had? Do you find that your tree-belts are of much benefit in holding back snowdrifts and protecting buildings, garden, etc., from the high winds?
4. Do you consider that your tree-belts have added to the money value of your property, and if so to what extent?
5. Do you think that the success you have had with your trees has influenced others in your neighbourhood to similarly improve their farms?

EXTRACTS FROM FARMERS' LETTERS

From the hundreds of replies received the following extracts have been selected and arranged according to provinces. The accompanying sketch-map indicates the location of the homesteads of the writers of the letters.



Sketch-map indicating approximate location of the farms of the writers of the letters in this bulletin

Manitoba

ONE THOUSAND DOLLARS WOULD NOT BUY THIS SHELTER

From F. H. Radclyffe, Bagot, Manitoba.—Your letter making inquiry as to my opinion of our success with Government trees is before me and in reply I desire to state that I cannot speak too highly of the work of your department in this respect and its tremendous value and importance in ultimate results, where the planting is faithfully carried out according to instructions.

My 3,000 trees now form a complete wind-break and shelter for house and yard and also give me an ideal garden spot. The trees were planted in 1903 and 1904, approximately 3,000 being set out in the two years. Ninety-five per cent lived and made good growth, a perfect wind-break and protection to garden. One thousand dollars would not buy this shelter, no, nor three times that amount.

CONSIDERS IT THE FINEST BLUFF IN MANITOBA

From Harry Howes, Carman, Manitoba.—I received a letter in August asking what results I got from planting out shelter-belts of trees, furnished by the Government Nurseries, on my Sperling farm.

I have certainly had the best of results. I think I got my first lot of trees from the Nursery in 1903 and for some years after continued to get them each year, but already had about five hundred planted out. I planted out altogether over seventeen thousand trees and now have, I believe, the finest bluff in Manitoba. I bought trees and slips and sowed seed as well, as I could not get them fast enough from the Nursery. I have cottonwoods, Manitoba maple, ash, elm, and willow and have them planted at a fair distance from my buildings. I took good care of each lot I planted, scuffling and hoeing them for three years carefully, after which I had no further trouble as they covered the ground, set four feet apart each way. Some of them must be fifty feet high now, and have been for years a splendid wind-break for the stock and buildings. The snow stays in the trees and my yard is always clear.



Shelter-belts planted by Geo. Harvey, Indian Head, Saskatchewan, about 1901. Photograph taken in 1921

I consider a bluff like mine would add at least \$2,000 to the value of any farm. In fact I would not live anywhere without planting trees out.

I would not advise planting many cottonwoods as I find them disappointing, dying at any time or size for no apparent reason. The other kinds are all satisfactory, especially the willows, which are splendid as an outside row for a bluff.

My neighbours have mostly got bluffs but some of them have not laid them out to advantage. I think if everybody would put out good bluffs it would both enhance the value of the land and also stop a lot of soil-drifting. I believe that on light land if the farms were crossed at intervals with hedges of willows that it would stop the land from drifting to a large extent.

I think the Government Nurseries have done a great work in putting out trees, and I for one greatly appreciate it.

A GOOD PROTECTION FOR BUILDINGS

From Thomas Patterson, Rosebank, Manitoba.—About the trees, I cannot speak too highly of them. I have had good success. We got trees first in 1914, I think it was, and about ten thousand trees are growing.

I certainly do find the trees a good protection for buildings. Last winter they held back fourteen feet of snow. They also help to break the wind a lot. I think the trees have added \$1,000 to the value of this property. Yes, I do think so [that the success of this plantation influenced neighbours to plant trees].

PICNICS ARE HELD IN THIS GROVE

From John R. Dutton, Gilbert Plains, Manitoba.—We first planted out trees from your Nurseries in 1909, and about 3,000 have been set out all told. We have had very good success. We planted 2,500 in 1900, willows, cottonwoods, white spruce, jack pine and Scotch fir, maples, ash, and elm. The land was prepared ahead, and after the trees were planted the ground was kept clear of weeds by hoeing. This to my mind is the

whole secret of successful wind-breaks; not altogether for keeping down weeds but to conserve the moisture.

In addition I planted at the same time a row of native spruce to protect the yard, and to my mind spruce are the best for holding back the snow and protecting buildings. The others may grow more quickly, but if the land is kept stirred around the spruce it is surprising how they will thrive. Some of my spruce are thirty feet high.

Certainly the plantation has increased the value of the property, just how much it is hard to say, 20 per cent anyway. But it is difficult for me to imagine the house and buildings without the trees around them.

Two farms between our place and the village have somewhat similar wind-breaks to ours, both planted since ours, and I think I can honestly say, due to our initiative. It is a common remark of friends and visitors, that we have a beautiful home, due, to my mind, largely to the trees. For the past two years the Anglican Sunday school has held its annual picnic on our grounds.

TREES PREVENTED DAMAGE BY STORM

From T. K. Spence, Medora, Manitoba.—In 1902, 1903, and 1904 I set out about 6,000 trees received from you, and the majority of these have lived and made a fine plantation. In 1917 I built a new house. In July, when the carpenter had the buildings well under way a very heavy wind-storm passed through here, doing considerable damage, but, on account of the trees, there was scarcely a board or plank disturbed either on the scaffolds or otherwise. Many of the poplars are over forty feet in height.

In 1919, 1920, and 1921, I planted about 2,000 trees a year. Help was so scarce in 1919 I did not give them the attention I should have and they practically all died. The years have been so dry it has been a big drawback to planting trees for the last six years. I was discouraged in my 1919 plantation and told your inspector the



Farmstead of W. Lang, Indian Head, Saskatchewan, trees about fourteen years old

circumstances—dry seasons and the labour problem—and that I would not take any more until I could attend to them and until the season would be more favourable. Your inspector thought I should try it again, which I did, and am glad I did, as I have ten rows of fine trees. I shall have land ready for 1923 and will put out a few rows east and south of my barn and house, thus having a belt entirely around my buildings, and taking in a piece of land a quarter of a mile long and an eighth of a mile wide.

Many people remark my early plantation and they are surely nice trees. I consider the plantation a good asset to the farm. It would sell for much more with them than without.

It is a pity more people do not avail themselves of the privilege of getting the trees. Had I not got them in this way I likely would have had none at all. Trees are a great benefit and protection from winds and weather, sheltering my buildings and live stock, hay and grain stacks, portable granaries and all other buildings.

Granaries left in the field empty are often destroyed while in the shelter of the trees they are safe until needed again.

As soon as the seasons are wet again and the crop conditions improved I think others will undertake plantations. Nearly every farmer around here has some trees planted. I perhaps have the most.

YOUNG FARMERS SHOULD PLANT SHELTER-BELTS

From James Cullen, Smith Hill, Manitoba.—I am well satisfied with the result of planting trees from your department. I first started putting out seedlings in 1903, about eighteen years ago, and I planted each year for five years. Altogether I put out about 7,000 maples, cottonwoods, ash, elm, Russian poplar, and two kinds of willows.

I have had pretty good success and I am glad that the Government gives us trees in that way as it is just a question whether I would have had trees or not as times were pretty hard when I first started to plant and I did not feel able to buy them.

I am sending you a rough sketch of my plantation. It is perhaps a little large but we have plenty of land and I like lots of room, both for house, lawn, and barnyard. All told it comprises about eight acres, with plenty of room inside for gardens and vegetables and small fruit trees. You will notice from the plan that I am well protected from the drifting snow and have very little snow to shovel in the winter.

My cottonwoods on the south and east are at least thirty feet high and are from nine to twelve inches in diameter. The maples have done pretty well and are about twenty-five feet high, but I am afraid they are more subject to insects and worms than cottonwoods. This last three years a lot of my maple and ash trees have been stripped bare of leaves by a worm that came on them just after they came out in leaf in the spring. The worms seem to leave suddenly and the trees all come out in leaf again, seemingly none the worse. The cottonwoods that I planted by themselves have done better than those planted among other trees. The Russian poplars have not done so well. They make a very rapid growth but they seem subject to canker or black rot and die, although I have some very nice ones yet.

You will excuse me for writing so much on this subject, as it is, I think, something that the farmers in the prairie districts should consider a little more, because a prairie farm looks more like a home, if there are a few trees around the buildings, besides it adds value to your farm. I think any young man starting out on a farm in a prairie country is making a mistake not to plant a shelter-belt.

AMPLE REPAID FOR TIME AND LABOUR SPENT

From A. M. Robertson, Justice, Manitoba.—I have had very good success with all trees and cuttings received through the department. The wind-breaks and shelter-belts, which were planted from 1902 to 1908, are now fifteen and twenty feet high, and today are noted and commented upon by people far and near as a beautiful sight, in the summer, and they are invaluable as shelter to man and beast in the cold weather.

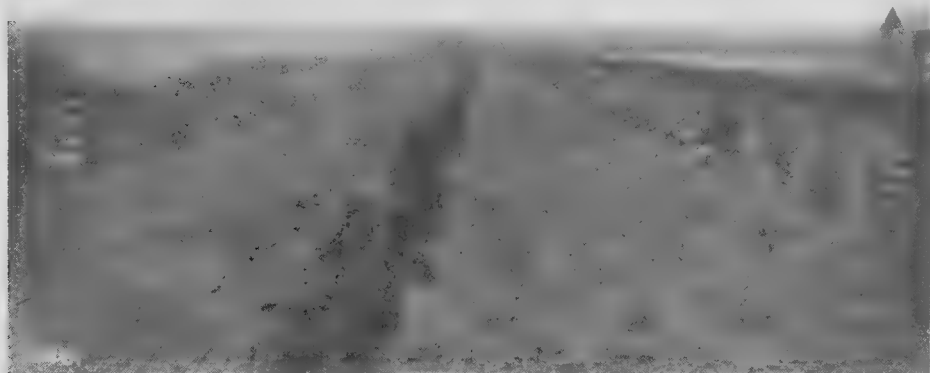
As to the actual value, it would be hard to say, but I feel that they have at least raised the value of my place by one thousand dollars. I might also say that I was one of the first, if not the first, to secure trees from the department for the planting of shelter-belts in this district, and I have been amply repaid for the time and labour spent on the planting of the same.

Many of my neighbours, seeing my success and the benefit accruing, especially protection in the winter months, have planted trees and now have splendid shelter-belts on their farms. In conclusion, I would say to every property owner, "plant some trees that will grow while you sleep and that will do more to beautify a home or building site than dollars spent in any other way."

Saskatchewan

TREES ADD FIVE DOLLARS PER ACRE TO VALUE OF FARM

From Ernest J. Sapsford, Perdue, Saskatchewan.—I first had trees from your nurseries about 1907, and up to date I must have set out 2,500 trees and cuttings. I think trees when set out according to your instructions are a good thing on a prairie farm and make the place look like home. They attract birds which make the farm more cheerful, and you cannot grow a good garden without the protection of trees. Trees make the place feel cool in summer and warm in winter. I consider it adds \$5 an acre in value to a farm, where you have protection of trees. It protects the stacks of hay from being blown away. You can also keep the hayrack on the wheels, where if you have no protection you are likely to find it on the next section after a wind-storm; then a wind-break is a protection for chickens from hawks, etc.



The start of a prairie shelter-belt, showing good care and cultivation, and practically every plant growing. Farm of E. Beckett, Herschel, Saskatchewan

I have on several occasions given a few of the trees or cuttings to neighbours, carefully explaining how and where to plant them, and they have invariably been surprised at their growth. I think that the Government Nursery Stations at Indian Head and Sutherland are doing good work which is greatly appreciated.

THE SHELTER-BELT IS A GREAT PROTECTION

From Mrs. T. C. Love, Rothbury P.O., Saltcoats, Saskatchewan.—I think the trees were obtained from your nursery in the year 1902. I cannot give correct number of trees, but we have somewhere between three and four acres. Success good, and we find the belt a great protection from both high winds and snow, and also the garden from frost.

We are sure it has raised the value of the farm quite a few hundred dollars.

I am sure the success of this plantation did influence neighbours to plant trees because quite a few got seedlings from us.

The only tree that has not been a success is the cottonwood. When planted in single rows apart from the other trees, they are not so bad, but when planted in the middle of a plantation they die, when about ten years old and about forty feet high.

TREES ADD TWO THOUSAND DOLLARS TO THE VALUE OF THE FARM

From N. C. Stewart, Rockhaven, Saskatchewan.—I first obtained trees from you about 1909 and have planted up to date about 9,000 trees. Some of them I planted from seed, also obtained from your Nursery.

I have had good success but I found that the trees took quite a lot of work the first few years keeping them free from weeds and grass, but the comfort and beauty of them at the present time more than pays for the trouble I have had with them. They keep all snow away from the buildings in the winter, and it is a relief to get behind them on windy days; besides I consider they have added to the money value of my property to the extent of at least \$2,000.

I was about the first in the district to plant any quantity of trees and I know that from the time they began to show worth while up to the present they have influenced a great number of people to improve their places.

NEIGHBOURS LAUGHED, THEN FOLLOWED HIS EXAMPLE

From Richard P. Robbins, Shaunavon, Saskatchewan.—The first trees were planted in 1912, and about 5,000 altogether.

"What success?" The very best. I have not lost fifty trees since planting. They are a great benefit in every way both in protecting the buildings from the high winds, in holding back snow, protecting garden truck, and making the same more sure, and they store up moisture where otherwise there often would be none.

"Have they added to the value of the farm?" Decidedly so. I have been offered \$1,000 up, over the ordinary land values in this part.

"Has the success of the plantation influenced the neighbours?" Yes indeed; when I started planting trees my neighbours and many others laughed at me and asked if I thought they would grow. My reply was, "everything has a beginning and there



Residence of R. P. Robbins, Shaunavon, Saskatchewan. This plantation was started in 1912, so that the oldest trees had been planted ten seasons when the photograph was taken

won't be any harm in trying." The result is that nearly all those who first laughed are now growing trees and wish they had started much sooner. My trees are now from ten feet to twenty-five feet in height and nearly all of them were marked with tin cans and sticks when first planted so that when I was cultivating I would not destroy them accidentally.

Most people seem to think that your method of close planting is all wrong, but in my humble opinion it could not be better, for several reasons: (1) the tree foliage

more quickly shades the ground, thereby retaining all moisture that falls, (2) the trees are better able to withstand the high winds in the early stages of their growth, (3) if for any reason some of the trees should die the loss is not so easily felt or seen. It seems to me that many farmers and others lose their tree-belts because their zeal and interest wane after the first few years, and there are many reasons as: (1) allowing grass and weeds to get ahead of them, (2) allowing cattle and horses in the belts in the fall and spring, (3) failing to clean out tumbling mustard, Russian thistle and various other weeds that blow into the belts excluding air and light, (4) cultivating and stirring the soil too late in the fall which keeps the sap in the limbs too late and the first hard frost kills same. (July 15 seems to me to be late enough), and (5) last but not least, failure to spray trees when attacked by bugs, etc. In my short experience the Manitoba maples seem most immune, and the willows most liable to attack.

My tree-belt cost me in cash about \$3 express. I worked in a city in England all my life until coming to Canada sixteen years ago and had no experience whatever in tree growing ten years ago. To sum up, I am a lover of nature and the beautiful, and am trying to make a home worth while in my adopted country. This was bare prairie in 1910 and situated in Saskatchewan's "dry belt."

TREES MAKE THE PLACE LOOK LIKE A HOME

From A. E. Baker, Leslie, Saskatchewan.—I fancy it was 1909 when I first set out trees. About 4,000 trees have been planted to date. They have been an immense success, lost none, and they are a decided advantage, both as a wind-break and a snow-trap, and last, but by no means least, give the place an appearance that nothing else can in making it look more like a home.

The trees have added a value of at least \$500 to the property.

Without doubt two plantations in my neighbourhood are the result of seeing the trees doing well with me. I might say I planted several hundred native spruce I procured from Nut Mountain district and they are all doing well. I have no hesitation in saying that the free distribution of trees has been of considerable benefit to the country at large, showing many that trees were useful as well as ornamental, and that with proper preparation of the soil before planting success is merely a matter of following directions supplied by the Forestry Branch. Wishing you every success in your work.

SHELTER-BELT HAS STOPPED SNOW DRIFTING

From Duncan McIntyre, McNutt, Saskatchewan.—The first grove I planted was in 1908 and 1909, when I set out 6,000 trees, elm, ash, cottonwood and maple. About 80 per cent have done well, and some trees now are twenty-five feet high, but I have since sold this place.

The next grove I planted in 1918 around my present buildings on the east and north, on land that had been broken in 1905 and had been in cultivation for thirteen years, was well manured and clean. This grove was well cared for and made a phenomenal growth, for in three summers growth I have ash trees eight feet high, also maple and caragana, while the acute leaf willow is ten and twelve feet high. The ever-greens I got from you, jack pine and lodgepole pine, have grown two feet this summer and look very healthy now.

Before I planted this grove the snow used to drift in from the northeast round the house, and last winter, after only two summers growth, the snow came no further than the grove where it was six feet deep. This grove has, I am sure, added \$5 per acre to the value of my property and has been instrumental in at least six of my neighbours applying for trees, because I myself have written out their applications (they being foreigners), and I am also sure that neither they nor myself would have given tree planting a second thought had the trees not been supplied by the Government.

WOULD NOT ACCEPT THREE THOUSAND DOLLARS FOR HIS TREES

From J. McLeod Robertson, Loreburn, Saskatchewan.—We received our first trees from your nurseries at Indian Head in 1911, and have received about 6,500 altogether.

We have been very fortunate in their cultivation, as there have been very few blanks in the various belts set out, and now they are high enough to be ample protection to our fruit bushes and garden from the high winds. Before we put the trees in we often had to dig away snow, before we could get into barn or granary. Drifts of snow six feet high were not uncommon, now we have very little snow other than the true snowfall.



Where pine and spruce seedlings are started under shaded seed-beds on the Dominion Forest Nursery Station, Indian Head. Note the well trimmed, dense hedge of caragana; the best all-round hedge-plant for the prairies

One can hardly overestimate the value of their trees in comfort, convenience and looks, and I am sure I am conservative when I say I would not care to accept \$3,000 for them today.

So far I have had no experience in planting trees, other than small fruit bushes, from commercial nurseries. These I planted after our first belt was two years old and they have been quite a success and very prolific, a fact which many of our visitors attribute to the shelter given by the larger trees.

I am pleased to say there have been quite a few people influenced by the appearance of our trees to similarly improve their own farms. A few have wished they had planted trees when we did. To those I would say, it is not yet too late. Seven years ago I planted my first trees and today our Russian poplars are from fifteen to eighteen feet high, willow twelve to sixteen feet, Manitoba maple ten to fourteen feet, green ash and caragana seven to eight feet, Siberian larch six to ten feet.

Four years ago I planted some evergreens and today the jack pine are from five to seven feet high, lodgepole pine five to eight feet and the white spruce are from two to five feet high.

A SPLENDID SHELTER TO HOME AND GARDEN

From F. E. Wilson, Caron, Saskatchewan.—I have about 8,000 trees all told. About half were received from the Forest Nursery Station. Most of the balance were propagated from them—cuttings.

During the years 1916 to 1919 about 2 per cent suffered from drought, though not all of them died. The trees that suffered were planted on knolls. On the lower ground the trees have undoubtedly reached the water-table, as they grew just as well in dry as wet years. Cottonwoods are of uniform height and are about thirty-six feet high; willow and Manitoba maple, twenty to twenty-five feet; ash and elm, fifteen to eighteen feet; jack pine up to fifteen feet; lodgepole pine, eight to ten feet; Scotch pine, eight to nine feet; Colorado blue spruce, six to ten feet; white spruce, seven to eight feet; Norway spruce, six to ten feet. The trees are a splendid shelter to home and garden and certainly enhance the value of the farm. I have a show place that has influenced the neighbourhood. Quite a few neighbours have obtained cuttings and seed from me.

In the planting of evergreens I have been very successful. Out of some 1,000 trees planted I think there are 950 alive today.

MORE HOMELIKE SURROUNDINGS ENCOURGE FARMERS

From Gilbert J. Carter, Govenlock, Saskatchewan.—In reply to your request for information concerning trees supplied, I must say that there would have been practically no trees planted in this neighbourhood were it not for the Government policy of free distribution of planting material.

While our district does not seem to be one of the most favourable for the production of trees, still a well cared for plantation does tolerably well considering the dryness of the past few years, and, when planted on more sloping land, a greater degree of success is attained, owing to some peculiarity of the soil on the knolls. It is reasonable to assume that the more homelike surroundings enhanced by a few trees have helped to keep many a discouraged farmer on his land through these lean years.

A BEAUTIFUL VIEW FROM ALL WINDOWS

From Maurice G. Davies, Dinsmore, Saskatchewan.—I first planted out trees obtained from your nurseries in 1915 and I have approximately 1,000 trees up to date.

I have had great success with the trees and certainly find them of much benefit in holding back snowdrifts, protecting buildings and garden, etc., from the high



Hundreds of thousands of seedlings growing on the Dominion Forest Nursery Station, Indian Head

winds. I also consider my farm is easily worth \$1,000 more on account of the trees, apart from the pleasure of having the beautiful view from all your windows.

The chickens and turkeys certainly enjoy the shade of the trees and they are a protection from hawks, etc. I am also quite sure that the success I have had with my trees has influenced others to plant trees too, and all my neighbours greatly admire them.

We have often contemplated selling our farm and buying elsewhere, but the thought of being without the trees has made us hesitate.

I do not think I should have planted the trees in the first place except for the very generous offer made by the Forestry Branch. I hope you will go on with the good work and have the greatest success in beautifying this great country of ours, as most Old Country people, at least, miss the trees more than anything else on this bare prairie.

TREES PROTECT BUILDINGS, YARDS, AND GARDEN

From G. W. Francis, Herbert, Saskatchewan.—I planted my first trees the spring of 1912, and have somewhere between 5,000 and 6,000 trees planted. I have had great success with trees. I have them planted 70 to 80 yards back on the north and west sides of buildings, several rows, some forty rods long on each side, large enough to have all buildings, garden, yards, etc. protected from winds. In the winter the shelter-belt keeps the yard practically free from snowdrifts of any kind.

As to value of trees. This is a very hard question to answer, but the very lowest value I could place on my trees would be \$1,000. I consider that a nice wind-break adds thousands of dollars to a farm, and I have told a large number of neighbours this and not one of them could deny it. I have evergreens, white spruce and jack pine, supplied by you several years ago. At time of planting these were very little larger than the fountain pen I am writing with and today these trees are as high as a house.

The other day a friend of mine living about six miles northeast of here said, when coming up close to a nice large white spruce tree, "My goodness, they are nice. I would give \$100 for that one tree if I could have it near my house."

The success I have had with my trees, I am sure, has convinced a number to plant, as I have given away hundreds of cuttings at different times. But even at that there are a lot of farmers that have not a tree planted yet.

OF GREAT VALUE IN PROTECTING BUILDINGS AND GARDEN

From R. Breckon, St. Boswells, Saskatchewan.—In the year 1911 I received the first consignment of trees, about 1,000, also the two following years I received about the same number, which I planted according to the plan and manner laid out by the department. I have had the best of success with them as I lost practically none, perhaps thirty or forty at most.

I find they are of great value in protecting the buildings from winds and snowbanks, also great protection to the garden as the trees are thick and high, which holds the snow supplying moisture to the same.

I consider the tree-belt has added money value to my farm, at least one thousand dollars.

I don't think I would have had a shelter-belt today if I had to purchase the trees, as money was a scarce commodity with the homesteader for the first years.

I am sure the success I have had has influenced others to improve their farms, as there have been so many taking cuttings from my trees, and many others have taken advantage of the free distribution as I did. I consider the free distribution of trees has been of inestimable value to this part of the country.

THE SHELTER-BELT IS A WONDERFUL BENEFIT

From J. A. Dobbin, Parkbeg, Saskatchewan.—It was in the year 1908 I made application for trees from your Nursery. In that same year I prepared my land, which was new breaking. But upon inspection I was advised to wait another year and get my land in a better state of cultivation, which I did. I received my first shipment of trees in the spring of 1910. I must have planted in the neighbourhood of 10,000 trees altogether to date. I feel that I have had fair success with them, with about 75 per cent of them living and doing well. There has been a great deal of drought in this section, but in spite of it all I had very few die as a result.

My shelter-belt has proven a wonderful benefit in holding back snow from the buildings. I scarcely ever have a snowdrift around my buildings in winter. They



Spruce and pine are transplanted from the screened seed-beds and set in rows about one foot apart. When from twelve to sixteen inches high they are distributed to prairie farmers at a nominal cost. General view of transplant plots at Indian Head

are a wonderful protection to garden truck as the winds do not affect the tender plants, which is the case in unprotected garden plots.

I believe that I am safe in saying that my trees have added \$2,000 to the value of my farm.

The evergreens that I received from you last spring have done very well and I am certainly going in for more of them, although if it had not been for the protection of the other trees they would not have done so well.

I am satisfied that trees can be grown to perfection here and am encouraged greatly by the compliments upon my success and arrangement of my grounds. This proves to me that many are admiring and being influenced to plant shelter-belts.

TREES HAVE ADDED COMFORT AND PLEASURE

From James Devlin, Venn, Saskatchewan.—I set out the trees about the year 1913, about 2,500 in all, besides a caragana hedge.

I consider that I have had good success. I find that the trees are of great benefit in holding back the snowdrifts and in protecting buildings and garden. We had a severe storm a few years ago. I had a separator standing in the shelter of the trees; the storm did not touch it. My neighbours had their barns blown down and buildings wrecked and I got off. So much for the trees.

I consider that the trees have added comfort and pleasure to my place even if they never added one dollar of value to the place. Do you think that if my place was for sale that I would not boost the price on account of trees.

Yes, I am sure that my trees have been the means of others starting to plant trees and it was what I saw others do who got trees from the department, that made me apply for trees to plant around my place.

I should say the first important thing about the tree is to see that it is planted right; the next is by all means possible keep down the weeds, especially grass, the worst enemy of all. I have not had much trouble in keeping my trees clean until these last few years when we had a spell of dry weather. There is one thing I have found out, that it is far better to plant the trees closer, for by doing so they kill the grass out quicker. I had some extra cuttings of willows and Russian poplar and as I did not have land prepared I put them in one row about a foot apart. I never transplanted them and now they are as tall as the others and they have killed all the grass that was in between the trees. I think that everyone should be encouraged to grow trees.

I have nothing but thanks for the Nursery Station and the fine men they send around to look after the work and advise us in every way to look after the trees.

Alberta

GOING IN FOR SMALL FRUITS AND POULTRY

From H. Jewsbury, Senior, Armada, Alberta.—I received my first trees in 1916, 1,125 in number, and planted them on land summer-fallowed in 1915 in accordance with the directions forwarded by you, and have received and planted some each year since. I have now about 4,000 planted and doing well. One belt which I commenced in 1916 is now about twelve feet high and has made an excellent wind-break and forms a snow-trap. I intend to plant small fruits now as the forest trees will give them ample protection. I am obtaining some more trees next spring to finish planting around an open stock water reservoir which I have just completed, and as this is twenty-two yards by twenty-two yards it will form an excellent protection against the hot drying winds we get here in the summer, so that I can be assured of having a good garden, which is very important.

As for the money value the trees have been to the homestead, I would not be able to say, but each year they give an added interest that my family and myself cannot state in dollars and cents, and the most pleasing feature about this tree planting is the success that I have attained.

The Manitoba maples have on several occasions frozen back, but appear to be getting harder each year, and quite a few that were damaged that way last year made new growth from the bottom, of more than five feet, which appears very gratifying to us when we take into consideration the dry and windy season.

We are going into the poultry business and we find that the trees are very beneficial for the poultry during the hot sunny days in the summer when they need protection from the hot sun and wind.

I would myself be pleased at any time to give my experience as I feel sure that by tree planting in long belts which could be done co-operatively is the greatest solution to soil-drifting and checking travelling weeds in this part of the chinook wind district.

BELTS HAVE PREVENTED SOIL-DRIFTING

From Thomas Hammond, Pincher Station, Alberta.—In the spring of 1907 I received the first two thousand trees from Indian Head. These were planted to form a wind-break on the west side of my farm and a few also set out for shade and ornamental purposes near the house. These latter are now about thirty-five feet high, the envy of our neighbours and a source of great satisfaction to ourselves. In 1909 I set out another allotment extending the wind-break to nearly a half mile. In 1911 I planted another belt at right angles to the first, running along the south side. These last are Alberta cottonwood, and in spite of the dry seasons have made remarkable growth, exceeding even the first belt.

I consider that these belts have been a substantial factor in preventing soil-drifting. Had the planting of trees been a compulsory part of homestead duties, this part of the country would not now be grappling with the problem of soil-drifting that has become such a menace.



Seedlings and cuttings baled and consigned to farmers all over the prairies. Part of a day's packing awaiting shipment at Indian Head

In winter the trees hold back snow that not only provides them with sufficient moisture, but irrigates a strip of land that I have sowed to alfalfa. I feel safe in saying that my trees have added twenty per cent to the value of the land.

The trees on my farm are much admired by my neighbours and we give away a great many cuttings, but the last few years have not been favourable for starting trees as there has been a lack of moisture. Some are realizing, however, that it is desirable to have tree-belts for gardens, etc., and are attempting to grow some on a small scale for this purpose.

No doubt a great many more trees would have been planted ten or fifteen years ago had the farmers come at that time with the intention of making permanent homes. Transient settlers don't plant trees.

TREES ATTRACT BIRDS WHICH DESTROY NOXIOUS INSECTS

From Telfer F. Ironside, Garden Plain, Alberta.—It is with the greatest of pleasure that I make reply to your letter as it is along the lines of tree planting and growing. This branch of farm business I consider one of the most important

and one that has not failed to bring good results, dry seasons or wet. It is simply this, if we take the time to plant trees and give them a little cultivation once in a while, they will surely grow, and such a different appearance it makes to the homes in this prairie country. At different times during these past dry seasons, and this has been one of them, I have felt discouraged with crops looking so poor, and thought of selling out, but, when we look at our tree plantations, I hate to leave them. In 1916 we planted out twelve hundred seedlings and cuttings from your department on the north side of our garden, and to-day these trees are admired by everyone that comes around. I might tell you that a number of the Russian poplars are now twenty-two feet to the tips, and a few are four or five inches in diameter, none less than four inches. The maples have also done splendidly, lots of them sixteen feet



Scotch pine plantation first winter after planting

high. The caragana and ash have also done well. I think every tree of this grove is still there that was planted in 1916. In 1919 we planted about a thousand more east of the house. These have also done splendidly. Maples in this bunch measure from four to five feet high and poplars up to eight feet, two inches. The red willow in this bunch are, some of them, as high almost as the poplar. The laurel willow is my favourite. It is a beautiful tree. In 1920 we planted eight hundred, and the maples and poplars in this grove have made the most rapid growth of any. A few maples in this are five feet high and poplars over six feet. This season, 1921, we planted nine hundred in five rows along the roadside—one willow, one maple, two poplars, one caragana. These are doing fine. We used our own willow and poplar cuttings and I may here say that thousands of poplar cuttings have been given to neighbours, so you see our influence has been good, and the plan of tree planting is growing more popular all the time. Altogether we have planted on this farm about four thousand and we intend planting a thousand more next season. That will be along the north line of our farm, and we will keep on for a few years yet till we get all around.

In a few years I look to this tree planting to solve the problem of soil-drifting; and also, by bringing more birds around (and more are coming every year), this also helps in the destruction of grasshoppers and such pests; so I hope the department will do all it can to keep this tree-growing business going for years yet.

I have been reeve of this municipality for a number of years, so I find in moving around that tree growing is being carried on most successfully and proving beneficial. We will soon be able to grow our own small fruit in the shelter of these groves. For two seasons we have been successful with black and red currants, but these are the only nursery stock that we have been lucky with. I should also say that our tree grove is as much admired in winter as summer, for this reason: we never have over one or two inches of snow on the ground and most of the time none at all, while lots of our neighbours have large drifts all over their yards. Last winter the snow piled up in one grove north of the yard to a depth of six feet. This I consider helps the trees much as they get this moisture that keeps them growing in a dry season.

As to the money value I could not estimate, but have been told time and again that the first grove I planted added a thousand dollars to the value of the farm, so with all the others I feel the value is great, and highly satisfactory. In closing I wish to heartily thank the Forestry Branch for devising this plan of tree planting. It is a most valuable asset to my farm and there should be a small plantation at every schoolhouse. Many a farm on these bald prairies looks like home to-day that would have been otherwise, had you not supplied these small beginnings.

VISITORS GO AWAY DETERMINED TO PLANT TREES

From Joseph Paetz, Big Stone, Alberta.—I find that Russian poplar, green ash, caragana, and red willows, are very hardy. The Manitoba maple is subject to freezing down in the winter and is a drawback to this extent.



Many people claim evergreens grow too slowly. Compare the picture on the opposite page which shows a plantation of Scotch pine planted in 1906, with this picture showing the same plantation fifteen years later. Many of the trees are over twenty-three feet high and measure up to five inches in diameter. Planted at Indian Head, Saskatchewan.

I figure that my trees have grown so well on account of the ground being well prepared. I broke my field early in the spring, worked it down right after being broken, and backset it, the same fall. Next spring I planted potatoes, summer-fallowing it the year before planting the trees. I planted my first trees in 1916, and to date I have planted 8,500 trees.

I find my trees a great advantage in holding snow from my yard. Before I had planted my trees my yard was covered with snowdrifts four or five feet deep. This is now caught by the wind-break.

I believe that my wind-break has added at least \$1,000 to the value of my farm. From my viewpoint it looks more like a home.

Neighbours coming to my place leave with the intention of planting wind-breaks as I did.

GROW ALL THE FRUIT THEY USE

From William H. Burrows, Lanfane, Alberta.—I planted the first lot of trees in 1913 and some in 1915, about 4,000 in all. They have done fine. Some of the willows and Russian poplars are sixteen feet high. They catch all the snow. We have our garden inside of the shelter-belt and grow currants, gooseberries, strawberries, and raspberries, all the fruit we use. I would not take \$1,000 for these trees. They are worth that for me to look at, as they surely look fine in June, and they are the only trees within miles of here. Most farmers think they have not time to plant trees, but it is a mistake. I grew these trees and wheat too, and now have something to look at besides bald prairie. I have talked to lots of people and showed them the benefits to be got from trees but when spring comes around they forget it. I am going to plant poplar cuttings all around this three-quarter section, as they break the wind, and I think they draw moisture. If we could get trees on every farm here it would be a wonderful asset to the country, besides, a growing tree is a thing of beauty and a home with trees and shrubs around it looks as if the owner of it was trying to make a home worth having, instead of a place merely to stay at.

I hope I have not taken up too much of your time, but I am a crank on trees as I came from a tree country, Ontario.

NEVER SAW A FINER GROVE OF TREES IN THE WEST

From John Rees, Craigmyle, Alberta.—I got the trees and cuttings from you about four years ago and they are eleven feet high just now. I set out about 1,400 then, and I planted another 800 last spring of my own cuttings. I did not plant these trees exactly to hold snow but just to make the place look good, just like home. They are planted in front of the house, from there to the road.

"Has tree planting added to the value of the farm?" I should say it had. I would not part with my trees for any money. I take great pride in them, put quite a lot of time on them, and that accounts for their success.

I have no doubt there are farmers around here who never thought of planting a tree till they saw these come on so well. It is a new country and people don't know what will grow till they see it or try it. Many call here when passing to inquire about my trees and say that they have travelled extensively and never have seen a finer grove of trees in the West.

All my success is due to two things; first, I got good kinds of trees from you to start with, and then cultivation has done the rest. Many people out here planted trees years before I did and that is all they did to them, expecting nature to do the rest. But it won't work, as you know, grass and weeds kill anything; so I am proud of the day that I made up my mind to send to Indian Head for trees.

PLANTING INSTRUCTIONS ARE AS NECESSARY AS THE TREES

From William Nelson, Garden Plain, Alberta.—The first trees I got from you in 1913. They are to-day about twenty-two feet high. I have to this date set out 10,000 trees. I find the trees are a benefit for I have no snow around the buildings now as at one time.

To be very conservative the place is worth \$2,000 more now than before any trees were planted. Your instructions how to plant are in the beginning as necessary as the trees. Several of my neighbours have planted after seeing my grove and I have given a good many cuttings away.

THIS LADY IS ENTHUSIASTIC ABOUT TREE PLANTING

From Mrs. E. J. Larler, "Groveholme," Picture Butte, Alberta.—I set out my first trees on May 24, 1913, and have planted about 7,000 to date. I have had glorious success in tree planting on south and west of buildings. On the east side grass got in its deadly work, but the trees are now doing fine. Trees planted in 1920 to the south of the buildings are waist high, and higher; caraganas are three feet six inches high, maples four feet, Russian poplars need no more cultivation; and cannot get the horse down the rows. Of course this south plot, 66 feet wide by 660 feet long, was well prepared. It was sod in 1917, broken in the spring of 1918; backset eight inches deep (not seven and three-quarters but eight inches by the measure) in the fall of 1918; packed and harrowed and cultivated when needed; partly planted to potatoes in 1919; cultivated all season, planted to trees, May, 1920. They grew so that one sarcastic person said you could not see the farm for trees, which is our aim. This year, 1921, has seen remarkable growth in our new trees—two to three feet.

The tree belts do retain the snow just where we want it and certainly save the garden. Were it not for the trees we would have had no garden the past three years.

I consider that the tree-belts have added to the value of the farm to the extent of \$1,000.

In 1912 when I decided to grow trees all the farmers, except one, sat on the fence and laughed at me. "Could not be done." "Waste of time." "Crazy." "Head wants riveting," they said. In 1913 I planted trees. The verdict was, "They'll die." "No water." "Takes tanks and tanks of water to grow trees," etc., etc. At this time I had not discovered water on this farm, and for nine years we hauled water in barrels, so you know our trees did not get much water outside of snow and rain. They got "watered" with a one-horse cultivator and plenty of it. By 1915 the tide began to turn and the skeptics began to say nice things. In 1919 and 1920 they who exist in shacks in weed fields in this district came to us with honeyed compliments begging flowers, vegetables, roses, etc., saying they would grow some trees "next year".

Our farm is on the road from Commerce and Coalhurst (mining villages) to Coaldale on the south and Sundial on the northeast, and from May to October we have a continual stream of visitors complimenting us, and asking for or buying flowers. We operate the local post office, and across the road is the local school, where church service is held Sunday evenings. Our trees have attracted attention from the churchgoers and others to the extent that ten farmers have planted trees, and at least three have made preparations for future planting along our road, while in the vicinity we can count four more who have started plantations. But nary a tree in the school yard. Does not Tennyson say, "Men have no fine spun sentiment who put their trust in bullocks and in bees." It should be part of the duty of the Minister of Education to inaugurate a system of compulsory tree planting in school grounds. In fact, compulsory tree planting every forty rods from north to south of each farm from the foot-hills to Winnipeg would prove the solution of most of our arid land troubles, soil-drifting, etc.

GROWS APPLES, PLUMS, AND CHERRIES INSIDE THE SHELTER-BELT

From R. Aykroyd, Wainwright, Alberta.—I first set out trees in 1912, and I have since been adding to them each year. I now have about 10,000 trees in my shelter-belts, including ash, Manitoba maple, willow, Russian poplar, spruce, lodgepole pine and jack pine, all of which are doing well. The ashes have grown about twenty feet;

the willows twenty-five; the Russian poplars, thirty; and the maples, twenty feet in height. I have jack pines three years old which are nearly ten feet high.

Inside of these wind-breaks, and without any other protection, I am growing several varieties of apples, plums, cultivated cherries, raspberries, blackberries, strawberries, gooseberries, currants, and other small fruits with great success. The ornamental trees, including lilac, honeysuckle, spirea, caragana, and Japanese roses, are also doing well.

The apple trees have borne fruit in paying quantities for the last two years. We gathered 250 quarts of raspberries this year from a patch of five rows which are not



The ideal prairie belt composed mostly of hardy evergreens. The jack pine on the right was planted in 1918, the white spruce in 1919; photographed in 1920. Stock planted by S. Josephson, of Mere, Alberta, and supplied by the Dominion Forest Nursery Station, Indian Head

more than 150 feet long and all the other fruits are growing in profusion. The wind-breaks are not only a protection to the fruit trees, shrubbery, etc., but they also prevent snow from drifting into the yard, and they break the wind, as well as improve the appearance of the place.

I consider that these trees have added at least \$4,000 to the value of my property. Nearly all my neighbours are now either planting wind-breaks or preparing the ground for them.

TREES ARE THE PRIDE OF THE FAMILY

From Wm. Hornby of Nateby, Alberta.—I had considerable experience in tree planting when I resided in England, but had the commercial nurseries been the only means of obtaining trees out here, I fear, owing to the hardships we have had to endure out here owing to drought and grasshoppers, I should not have had a tree planted on the ranch as yet. Moreover, I might here state but for having such a fine belt of trees I fear I should have abandoned this ranch before now. They are the praise of everyone who sees them during the summer months and I think they have been the cause of several farmers in this locality planting trees. My trees are the pride of the whole family.

GOOD SHELTER IN WINTER AND SUMMER

From George Hanger, Badger Lake, Alberta.—I am very pleased to say that my trees are doing well. I got my first lot in 1912, and have now over 2,000 growing. They give a good wind-break shelter for winter and summer. The trees are of special

value in holding back snow on my garden, which is very good in a dry year. I consider the trees add considerably to the value of the farm.

My trees are very nice when green and there are a lot of my neighbours who wish they had some like them. One of my neighbours planted after he saw the results I secured, and he now has the prettiest growth in this district.

INTERESTING DESCRIPTION OF A SUCCESSFUL PLANTATION

From N. J. Anderson, Barnwell, Alberta.—Mr. Anderson writes that he planted trees first in 1917 and up to date has set out 5,000. He considers that the trees have increased the value of his farm by \$2,000 and is sure that his experience has resulted in plantations being set out by his neighbours. Mr. Anderson's experiences in tree planting are set forth in the following extracts from an article written by himself and published in the *Farm News Letter* issued by the Canadian Bank of Commerce, June, 1921:—

"I always believe in profiting by the experience of others, and if there is anything new comes out in methods of agriculture, I am usually one of the first to try it for better or for worse.

"While on a trip to the Lethbridge Experimental Farm, the idea came to me to plant trees. I set to work and ploughed three strips, each one rod wide, and arranged these strips forty rods apart through my 160 acres, dividing my homestead into forty-acre plots running north and south. These I ploughed about twelve inches deep and thoroughly cultivated all summer, taking care to keep all the weeds down.

"Having ploughed and prepared these strips to plant trees the following year, I applied to Mr. Norman M. Ross, of the Dominion Forestry Nursery Station at Indian Head, Sask., for five thousand trees.

"I followed the instructions given me in putting in the trees. The maple and ash were furnished as seedlings, while the Russian poplar and willow were cuttings. I put the cuttings in with a shovel at an angle of 45 degrees, allowing only one bud to be exposed, and packed the soil well on top of each cutting. The seedlings were laid at the same angle in a ploughed furrow, and covered also by the plough at least three or four inches deeper than they were in the original nursery. I packed them by running a wagon wheel up and down the rows just over the roots of the seedlings, taking care not to run over the tops. It took two of us only four days to complete the job. I don't believe over twenty-five trees out of the five thousand died, and the secret is to properly prepare the ground a year previous to planting, and then to plant properly and, above all, pack well, after planting. The first season's growth was from three and a half to four feet, and looked a perfect picture. The inspector called at this time, and was more than pleased. He found them perfectly free from weeds and well cultivated, which he said was the whole secret. I have two children who have spent an hour each day of the summer holidays hoeing these trees, where it was impossible to reach with a cultivator, and that has been sufficient to keep the whole five thousand trees clean, and has also encouraged a home-making interest in the children.

"The trees are now an average of ten to twelve feet high, and the coming year will for the first time see a stream of water running beside each wind-break, as we now have irrigation. I intend to use these rows in the future not only for wind-breaks for the land but for shade for cattle, when I will use two of these forty-acre plots for pastures. I will irrigate the one while pasturing the other; then change about. Hay and grain will be raised in the other two plots.

"I have two separate enclosures of an acre each with six rows of trees around the outside, making an ideal place for garden and small fruits. I have nothing original to tell you, only I was willing to try what others said could be done, and I declare that there is no spot in Canada too dry to grow trees, for I have tried it, and in 1918 and 1919, when we had insufficient rainfall to raise crops of grain, my trees grew from three to four feet each year, and practically every tree is alive, and pulled

through one of the driest years I have seen since Alberta was settled. In 1919, when even the grass never became green as a result of drought, my whole farm looked like an oasis in a desert, and my trees were really the only thing that was green on my home, and were a great comfort to us all.

"It is wonderful to think that only four years ago a mere bud of a cutting projected an inch out of the ground and seedlings possibly eighteen inches. Many of my neighbours predicted failure in my attempt, but year after year the trees grew taller as their predictions grew smaller, and now I am supplying these same people with cuttings, while they could just as well have had trees twelve feet high, doing away with the barrenness of the prairie, breaking the wind, creating joy in home-making, and showing that our lives and surroundings are just what we choose to make them."



The most effective and practical shelter-belt—two rows of white spruce planted alongside a narrow belt of broad-leaved trees. These spruce seedlings were raised on the Dominion Forest Nursery Station, Indian Head, and planted by A. G. Hopkins at Surbiton, Saskatchewan

In a letter written on November 17, 1921, Mr. Anderson gives the following additional information: "With the assistance of irrigation this year the trees have made an additional growth of from four to five feet. They are now eighteen to twenty feet high and furnish a fine break-wind for us."

ANOTHER LADY WHO DELIGHTS IN TREES

From Mrs. Isabella Hogg, Lakelands Ranch, Longview, Alberta.—My husband got trees in the year 1910, that was 11 years ago. Our success has been very good indeed. The trees are a very great benefit in every way. My shelter-belt is in the wrong place from my present house—my old one was burned—being on the southeast, instead of the northwest. As it is the trees do break the east winds and are a delightful shade in summer for ourselves and animals. Right now the stock know where to get shelter from the cold north winds. My poultry also get good shade in summer and shelter on windy days. I intend making my garden there where it will be somewhat sheltered from the southwest winds. I am so delighted with the good results of this grove that I have ground prepared to plant out a shelter-belt on the northwest and connect my

present belt so that in the years to come my house will be sheltered all around. Besides this I intend to plant some plots for beauty, some of which will be from cuttings from my own trees, which were supplied by you. I have collected quite a quantity of the seed of maple and caragana, which I intend also to plant out, for I feel I can't have enough trees.

Yes, the success of this plantation has influenced other people, for others are now setting out trees.

I consider my grove the prettiest and nicest thing I have about my farm. Without it I don't think I would care to live on the farm. Even in winter I enjoy walking through them. They are beautiful and useful at all times. The bigger they grow and the more I have of them they tie me stronger to my home. The birds build in them, and flocks of birds come to them that we never saw before the trees were there. I think the best thing of all about the trees is that they make a place look like home, while even fine buildings to me would not have their real worth without trees; so my trees are to start growing before I am to have many buildings.

BENEFITS OF PRAIRIE TREE PLANTING CLEARLY SET FORTH

From Elmer C. Hallman, Acadia Valley, Alberta.—With regard to my experience in growing trees I beg to report that I believe that the efforts of your department have been abundantly justified in the results obtained.

One of the most effective criticisms levelled against this prairie country has been its treelessness. When I first saw the Canadian West in 1902, I came with an open mind as to whether I should like to settle on the prairies. The deciding factor, after



With a little care and wisely expended labour the bare prairie can be transformed to provide most attractive home surroundings. Seventeen years before this photograph was taken there was no shrub or tree growing on this spot. A portion of the grounds on the Dominion Forest Nursery Station, Indian Head

seeing the economic advantages, was the possibility of growing trees and making beautiful the home surroundings, as indicated by the results obtained at the Dominion Experimental Farms at Brandon and Indian Head, as well as in the plantings at the various stations along the Canadian Pacific railway. The opportunities for economic betterment alone would not have been sufficiently attractive for me to risk the move from a good home to the prairies.

Since that time, through the work of the Forestry Branch many attractive groves, shelter-belts and home plantings beautify the prairie and constitute a perpetual

demonstration to visitors and neighbours in almost every community on the prairie that "real" homes can be established even upon the "bald-headed" prairie.

I have planted from 8,000 to 10,000 trees on each of two farms in shelter-belts, and a caragana hedge about the lawn. Most of these have done well. I would judge that the Russian poplar and Manitoba maple have given the best results here. The spruce are slow growing, but if they continue to thrive, they will be ideal for the next generation.

One very real benefit of a shelter-belt, properly located, is holding the snow on the garden plot where the resulting moisture is so welcome.

Nothing about our farm elicits so much admiration and so many complimentary remarks from passers-by as the caragana hedge, and no job yields greater satisfaction on the farm than the care given to it.

Many people have expressed surprise that such plantings could succeed on the prairie, and, seeing these, have been encouraged to plant for themselves. These plantings engender pride in the home among all the members of the family.

GENERAL CONSIDERATIONS

There is no question that certain districts are more favourable for tree-growth than others. Generally speaking trees will make a more rapid growth at the lower elevations in Manitoba than farther west. The height a certain tree will reach after so many years depends on many factors, such as soil, rainfall, situation, closeness of planting, cultivation, etc., so that one cannot give measurements that would apply to all districts and growth under all conditions.

The following figures, showing the comparative growth of different kinds of trees growing on the Indian Head Nursery will be of interest, however, as they are averages of thousands of measurements, made entirely in plantations, where the trees are spaced approximately four feet apart each way, on average clay loam soil, and in a district where climatic conditions generally are about the average for the prairie regions:—

Kind	Average height,	
	10 years	20 years
Russian poplar..	20 feet	35 feet
White birch..	15 "	24 "
Maple..	16 "	22 "
Ash..	11 "	20 "
Elm..	10 "	17 "
<i>Conifers—</i>		
Siberian larch..	14 feet	29 feet
American larch or tamarack..	12 "	24½ "
Scotch pine..	9 "	21 "
Jack pine..	9 "	20 "
Lodgepole pine..	6½ "	18 "
White spruce..	5 "	17½ "

It is interesting to note the growth of the evergreens, the pines and spruce, compared with the growth of the broad-leaved kinds. Many will not plant evergreens, because, they say, they grow too slowly. It is true that for the first few years the growth is much slower than most broad-leaved kinds, but as will be noticed by a comparison of the measurements at twenty years old, these evergreens soon catch up to most of the broad-leaved kinds, and for many subsequent years they will make a proportionately greater height growth. For instance, at twenty years a maple averages twenty-two feet and Scotch pine, twenty-one feet. We may expect that at thirty years of age, the maple might be twenty-eight feet high and the Scotch pine at least thirty-one or thirty-two feet.

For all information concerning the free distribution of trees for growing shelter-belts on prairie farms write to

NORMAN M. ROSS,

Chief of Tree-Planting Division,

Dominion Government Forest Nursery Station,
Indian Head, Saskatchewan

